



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/790,864	03/03/2004	Toshiyuki Takizawa	2004 0347A	3118
513	7590	10/15/2009		
WENDEROTH, LIND & PONACK, L.L.P. 1030 15th Street, N.W., Suite 400 East Washington, DC 20005-1503			EXAMINER	
			QUINTO, KEVIN V	
			ART UNIT	PAPER NUMBER
			2826	
			MAIL DATE	DELIVERY MODE
			10/15/2009	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/790,864	<b>Applicant(s)</b> TAKIZAWA, TOSHIYUKI
	<b>Examiner</b> Kevin Quinto	<b>Art Unit</b> 2826

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If no period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED. (35 U.S.C. § 133).

Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 05 June 2009.

2a) This action is FINAL.      2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 9-17,22 and 36 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) Claim(s) 12-17,22 and 36 is/are allowed.

6) Claim(s) 9-11 is/are rejected.

7) Claim(s) \_\_\_\_\_ is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All    b) Some \* c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) Notice of References Cited (PTO-892)

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) Information Disclosure Statement(s) (PTO/95/08)  
Paper No(s)/Mail Date 5 June 2009

4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_

5) Notice of Informal Patent Application

6) Other: \_\_\_\_\_

**DETAILED ACTION**

***Response to Arguments***

1. Applicant's arguments with respect to claims 9-11 have been considered but are moot in view of the new ground(s) of rejection.
2. The indicated allowability of claims 9-11 is withdrawn in view of the newly discovered reference(s) to Hosobane et al. (JP 05-243614 A1). Rejections based on the newly cited reference(s) follow.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 9, 10, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over by Hosobane et al. (JP 05-243614 A1).
5. In reference to claim 9, Hosobane et al. (JP 05-243614 A1, hereinafter referred to as the "Hosobane" reference) discloses a similar structure. Hosobane discloses (paragraph 43) a p-type compound nitride semiconductor (GaAlN) which includes group III element aluminum and group V element nitrogen. It also comprises a plurality of elements, one of the elements being a localized band formation element (phosphorus, arsenic, antimony) which is isovalent with at least one other of the elements of the p-

type semiconductor and has a smaller electronegativity than an electronegativity of the at least one other element. Another of the elements is an acceptor element (zinc) which has fewer valence electrons than valence electrons of at least one other of the elements of the p-type semiconductor. An amount of the localized band formation element in the p-type semiconductor is larger than an amount of the acceptor element in the p-type semiconductor (paragraph 44). The acceptor element has a lower energy level than a top of an energy band of the localized band formation element and are both distributed uniformly. Hosobane does not disclose the exact atom % of the localized band formation element as claimed by the applicant. However Hosobane discloses that the amount of the localized band formation element has a direct impact on the amount of activated acceptors which leads to a low resistance layer that is desirable in the art. Thus Hosobane makes it clear that the amount of the localized band formation element is a result effective variable. It would have been obvious to one having ordinary skill in the art at the time of the invention was made to adjust the amount of the localized band formation element, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). Therefore claim 9 is not patentable over Hosobane.

6. In reference to claim 10, Hosobane discloses the use of zinc as the acceptor element (paragraph 43).

7. With regard to claim 11, Hosobane discloses the use of phosphorus, arsenic, and antimony (paragraph 43).

8. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hosobane et al. (JP 05-243614 A1) in view of Wolfram et al. (USPN 4,901,330).
9. In reference to claim 10, Hosobane discloses the use of zinc as the acceptor element but does not disclose the use of carbon, silicon, germanium, tin, beryllium, magnesium, and cadmium. However Wolfram et al. (USPN 4,901,330, hereinafter referred to as the "Wolfram" reference) discloses that carbon, silicon, germanium, tin, beryllium, magnesium, and cadmium are known acceptor materials (column 22, claim 26). The applicant is reminded in this regard that it has been held that a mere selection of known materials generally understood to be suitable to make a device, the selection of the particular material being on the basis of suitability for the intended use, would be entirely obvious. See *In re Leshin* 227 F.2d 197, 125 USPQ 416 (CCPA 1960) and also *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). Therefore claim 10 is not patentable over Hosobane and Wolfram.

***Allowable Subject Matter***

10. Claims 12-17, 22, and 26 are allowed.
11. The following is a statement of reasons for the indication of allowable subject matter: the reasons for the allowance of claims 12-17, 22, and 26 were cited in a previous Office action.

***Conclusion***

12. Applicant's submission of an information disclosure statement under 37 CFR 1.97(c) with the fee set forth in 37 CFR 1.17(p) on June 5, 2009 prompted the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 609.04(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Quinto whose telephone number is (571) 272-1920. The examiner can normally be reached on M-F 8AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sue Purvis can be reached on (571) 272-1236. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kevin Quinto/  
Examiner, Art Unit 2826

/Sue A. Purvis/  
Supervisory Patent Examiner, Art Unit 2826